

46050 Manekin Plaza ■ Suite 100 ■ Sterling, Virginia ■ 22170
703 ■ 444 ■ 7000 703 ■ 444 ■ 1685 FAX

September 30, 1991

Mr. Robert Stroud
U.S. EPA Region III
841 Chestnut Building (3HW61)
Philadelphia, PA 19107

Reference: Corrective Measures Study (CMS)
DuPont Experimental Station
GeoTrans Project No. 7624

Dear Mr. Stroud:

The purpose of this memo is to address the issues raised by the State of Delaware regarding the Corrective Measures Study (CMS) for the Experimental Station. As a general comment, the Corrective Measures Study is consistent with the concerns of the State, although implicitly. To explicitly address the issues raised by the State, it is requested that this memo be included in the record for purposes of EPA's review.

ISSUE 1: The CMS needs to recognize the Delaware Water Quality Criteria for Protection of Human Health. These criteria can be incorporated as the basis for establishing groundwater remedial goals due to potential impact on surface water quality in Brandywine Creek. The CMS used EPA's MCLs for this purpose. In general, the Delaware standards are lower than the MCLs for several contaminants, because they are typically based on 10^{-6} risk levels. In addition, the Delaware standards are significantly lower than method detection limits for several constituents of concern.

ISSUE 2: The State maintains that the "presence of contamination of the soils and groundwater should warrant identification of the impacts to Brandywine Creek". The CMS did identify impacts of the principal contaminants found in shallow groundwater. Because the primary route for contaminants in soil to reach the Creek is through the groundwater, soil contaminants not found in groundwater were not considered in establishing remedial goals for groundwater. Corresponding goals for soil contaminants not identified in groundwater could be added to the list of remedial goals.

ISSUE 3: The State advises that the CMS should consider the transport of contaminated soil to Brandywine Creek via surface water runoff. This pathway was not evaluated in the CMS for

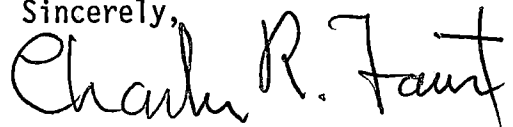
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several reasons. First, most of the contaminated area is paved. Second, in unpaved areas the levels of soil contamination are generally low at the surface. Third, the total annual runoff from unpaved areas is less than ten percent of the worst case estimate of groundwater discharge. A conservative estimate of surface runoff is about 400 cubic feet per day based on annual runoff of 3 feet and an unpaved surface area of one acre. The worst case groundwater flow estimate is about 4350 cubic feet per day.

In order to address the issues raised by the State, Table 5.5 of the CMS will be revised so that groundwater remedial goals for impact to Brandywine Creek use State criteria. Where the MCL for a given contaminant is lower than the State Criteria, the remedial goal will not be revised. This will result in changes in these remedial goals and the establishment of goals for soil contaminants that have not been identified in groundwater. Because the State criteria are based on a 10^{-6} risk level, a mixing factor based on maximum groundwater flow (0.05 cubic feet per second, GeoTrans, 1990, RFI) and an average flow in Brandywine Creek (477 cubic feet per second during the past 42 years) is used. This results in a mixing factor of 10,000. The factor used in the CMS was based on the minimum daily flow because most of the MCLs have associated risk levels greater than 10^{-6} . An amended table for remedial goals is attached to this memo. In addition, it is proposed that DuPont's monitoring program be modified to include the additional contaminants (benzo[a]pyrene, fluoranthene, and beryllium) in the list of remedial goals. These contaminants would be sampled and analyzed annually for the first five years of the monitoring program.

Sincerely,



Charles R. Faust
Executive Vice President

CRF/eb

Attachment

cc: C. Chien
W. Farnum
W. Porter

GeoTrans, inc.
AR390007

Table 5.5. Remediation goals for constituents of concern in groundwater and soil.

Groundwater Constituents	For Drinking Water ($\mu\text{g/L}$)	To Impact the Creek ($\mu\text{g/L}$)
Benzene	1.2 ^a	12,000.
α -BHC	0.0041 ^a	41.
Carbon tetrachloride	0.26 ^a	2600.
t-1,2-Dichlorethene	100. ^b	100,000.
Methylene chloride	2. ^a	20,000.
1,1,2,2-Tetrachloroethane	0.17 ^a	1700.
Tetrachloroethene	5. ^b	5,000.
1,1,2-Trichloroethane	0.61 ^a	6,100.
Trichloroethene	3.1 ^a	31,000.
Vinyl chloride	2. ^b	2000.
Benzo[a]pyrene ^c	0.0027 ^a	27.
Fluoranthene ^c	50. ^a	500,000.
Beryllium ^c	0.0038 ^a	38.0.

^aDelaware Water Quality Criteria for Protection of Human Health, Table 2 of Amended Standards, 2 Feb 1990

^bEPA MCLs

^cNot detected in groundwater

Soil Constituent	Remediation Goal (mg/kg)
Beryllium	0.86
PAHs (Benzo[a]pyrene)	0.79